

- 10 -

Liaw *et al.*
Appl. No. 09/630,454***Remarks***

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendment, claims 1-23 are pending, with claims 6-9 and 11-16 being under consideration, and claims 6, 9 and 11 being the independent claims. Claims 1-5, 10 and 17-23 are withdrawn from consideration. Claims 6, 8, 9 and 11 are sought to be amended. These changes are believed to introduce no new matter, and their entry is respectfully requested. Based on the above amendments and the following remarks, Applicants respectfully requests that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

Support for Amendments

The amendment to claim 6 was merely re-wording the claim to more clearly claim the subject matter. The amendment to claim 8 was to correct a typographical error, and the amendment to claim 9 was a grammatical clarification. The amendments to claim 11 were to correct a typographical error (part (d)) and to more distinctly claim the subject matter (part (f)). Therefore, the applicants believe that the amendments introduce no new matter.

Rejection Under 35 U.S.C. §112, first paragraph (Withdrawn)

Applicants acknowledge, with thanks the withdrawal of the rejection of claims 11-16 under 35 U.S.C. §112, first paragraph, regarding the deposit of the claimed microorganisms.

189914-1

- 11 -

Liaw *et al.*
Appl. No. 09/630,454

Applicants also acknowledge the withdrawal of the rejection of claims 6-8 as containing new matter.

Rejection Under 35 U.S.C. §101, (Withdrawn)

Applicants acknowledge, with thanks the withdrawal of the rejection of claims 6-8 under 35 U.S.C. §101.

Rejection under 35 U.S.C. §102(b) (Withdrawn)

Applicants acknowledge, with thanks the withdrawal of the rejection of claim 9 under 35 U.S.C. §102(b) with respect to the reference by Nakanishi *et al.* (U.S. 4,657,860).

Applicants also acknowledge the withdrawal of the rejection of claims 6-8 with respect to Sano *et al.*, (U.S. 4,436,170).

Rejection under 35 U.S.C. §102(b) (Maintained)

The examiner maintained the rejection of claims 6-8 under 35 U.S.C. §102(b) as being anticipated by Shiio *et al.* (U.S. Patent No. 5,077,207, the "207 patent").

The examiner stated that

Shiio's [sic] culture medium was sterilized by autoclaving, i.e., heat sterilized heat sterilized (see Example 1); the prior art amino acid producing bacterial strain did grow in this culture medium and therefore was resistant, as recited in the instant claims. This also suggests that sterilization of the prior art culture medium by autoclaving (heat sterilization) did not produce amino acid derivatives and other metabolic antagonists that inhibited culture growth.

The applicants respectfully traverse and assert that the culture medium of Shiio *et al.* was autoclaved before the bacteria were added; the wastestream media defined by the 189914-1

- 12 -

Liaw *et al.*
Appl. No. 09/630,454

term "raffinate" as claimed is not the same as the culture medium of Shio *et al.* in that the heat sterilization would have to occur *after* culturing the bacteria and an ion chromatography step, as discussed below.

The amendment to claim 6 clarifies that the raffinate is heat sterilized, and thus the bacterial strain B is isolated from said heat sterilized raffinate-containing medium.

The examiner also asserts that "[t]he definition of the term 'raffinate' in the instant specification is not closed, and therefore, is not limited to a wastestream product from an ion exchange operation for lysine recovery." The examiner also states that

[t]he specification at lines 4-6 on page 7 provides evidence that the description of 'raffinate' is not limited to a wastestream product from an ion exchange operation for lysine recovery, but is intended to broadly encompass ammonia sulfate, L-lysine, other amino acids, salts and carbohydrates. The prior art culture medium contains these substances. It is further noted that the feature upon which Applicants rely ('wastestream product from an ion exchange operation for lysine recovery') is not recited in the rejected base claim. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, F.2d 1181, 26 USPQ2d 1057 (Fed. Cir.1993).

The applicants maintain that the definition of "raffinate" in the specification on page 7, lines 3-8, limits the claims to a "*wastestream product from an ion exchange operation for lysine recovery*" [emphasis added by applicants] and that *In re Van Geuns* does not apply as the definition of the present specification is merely defining a limitation already in the claim. *Van Geuns*, as part of an Interferences proceeding, attempted to incorporate "NMR" language into a claim which did not have the limitation. In the present instance, the limitation "raffinate" is stated in the base claim and is merely defined in the specification on page 7.

In *In re Zletz*, (893 F.2d 319, 321 (Fed. Cir. , 1989)), cited in *In re Van Geuns*,

the Court stated, that
189914-1

- 13 -

Liaw *et al.*
Appl. No. 09/630,454

...during patent examination the pending claims must be interpreted as broadly as their terms reasonably allow. When the applicant states the meaning that the claim terms are intended to have, the claims are examined with that meaning, in order to achieve a complete exploration of the applicant's invention and its relation to the prior art. See *In re Prater*, 56 C.C.P.A. 1381, 415 F.2d 1393, 1404-05, 162 U.S.P.Q. (BNA) 541, 550-51 (1969). [Emphasis added by applicants]

The applicants assert that the meaning of the claim has been clearly stated as being limited to the definition of disclosed in the specification and thus, the claims should be examined "with that meaning," as stated by the court.

Therefore, the claimed isolated bacterial strains are intended by the applicants to grow in a medium isolated from an ion exchange process, and which has been heat-sterilized.

Additionally, the definition of the term "raffinate" is known in the art to be "a phase remaining after extraction of some specified solute(s). When necessary, it should be further specified, e.g. scrub raffinate. ... The term should normally be applied only to waste streams..." (*IUPAC Compendium of Chemical Terminology*; 2nd Edition (1997)) (Exhibit A, attached) The applicants provided a further definition of the term as recognized in the art on page 9, line 29 and bridging over to page 10, line 3 as being "that portion of the treated liquid mixture that remains undissolved and is not removed by the selective solvent" (*Dictionary of Scientific and Technical Terms*, Sybil P. Parker, ed., McGraw Hill (1989)). The applicants further define the term on page 10 as:

More specifically, in connection with the fermentative production of amino acids, the raffinate is that portion of the cell culture media that does not bind to the chromatographic column; raffinate is the broth effluent waste stream product generated during the ion-exchange chromatographic purification of an amino acid. Typically, as used herein, raffinate refers to the first waste stream product generated after the initial application of the growth media to the ion-exchange resin.

189914-1

- 14 -

Liaw *et al.*
Appl. No. 09/630,454

Therefore, the definition disclosed in the present specification of a wastestream product is recognized in the art. The definition upon which the applicants are relying specifies that the raffinate is derived "from an ion-exchange operation for lysine recovery."

Therefore, since the culture medium of the '207 patent does not match the definition of "raffinate," it cannot disclose the creation of a raffinate-resistant organism. The concerns of the examiner regarding "product-by-process" also would not apply in the present application, as the claimed process would produce a materially distinct product, a raffinate-resistant bacterial strain, than is taught by Shiio *et al.*, especially in light of the disclosure that heat sterilized raffinate contains growth inhibitory substances, which would not be present in the non-raffinate-containing medium of Shiio *et al.* The claimed microorganisms have been selected to grow in the raffinate medium that contains the inhibitory substances; the microorganisms of Shiio *et al.* would not have the superior growth characteristics as the claimed microorganisms.

Therefore, each and every limitation of the claims has not been met by Shiio *et al.*, and the claims are not anticipated. Accordingly, applicants respectfully request that the rejection be withdrawn.

Rejection Under 35 U.S.C. §112, second paragraph (New)

The examiner rejected claims 6-8 and 11-16 under 35 U.S.C. §112, second paragraph, as being indefinite. The applicants respectfully traverse.

- (a) The examiner stated that claim 6 lacks a proper antecedent basis for the recitation "strain B" and suggested that the word "said" prior to "strain B" would clarify the claim in line 8. While the applicants disagree and believe

189914-1

- 15 -

Liaw *et al.*
Appl. No. 09/630,454

that it is clear that "strain B" is the same strain B throughout the claim, the applicants have amended the claim according to the examiner's suggestion.

- (b) The examiner also objected to line 6 of claim 6 as being indefinite in the recitation of "a raffinate-resistant bacterial strain B." Although the applicants disagree, the claim has been amended and believe the concerns of the examiner have been addressed.
- (c) The examiner stated that the term "said mutant" lacked an antecedent basis in line 8 of claim 11. The applicants have amended the claim to address the concerns of the examiner.
- (d) Claim 6 was stated by the examiner to be indefinite because the examiner stated that it was not clear whether the 1% raffinate medium was heat sterilized. The amendment to the claim is believed by the applicants to overcome the rejection.
- (e) The typographical error in the phrase "strain B produces and amino acid" has been corrected in claim 8, line 2, as requested by the examiner.
- (f) Claim 11 was rejected for what the examiner stated as being "internally inconsistent." The examiner stated the phrase "the strain" in the last line was confusing and questioned whether the phrase referred to the L-lysine-producing strain in lines 1 and 2, or to the mutant strains of part (f). It is believed by the applicants that the amendment to claim 11 has overcome the rejection.
- (g) The rejection of claims 7 and 8 was based upon the rejection of base claims 6 and 12-16. As the applicants believe that the rejections have been overcome

189914-1

- 16 -

Liaw *et al.*
Appl. No. 09/630,454

in the base claims, the applicants request that the rejection of claims 7 and 8 be withdrawn.

The applicants believe they have overcome all of the concerns of the examiner under 35 U.S.C. §112, second paragraph and respectfully request that the rejections be withdrawn.

Rejection Under 35 U.S.C. §112, first paragraph (New)

The examiner has rejected claims 11-16 under 35 U.S.C. §112, first paragraph, as containing new matter. The examiner states that the limitations in claim 11, of "L-lysine producing *Corynebacterium* strain.... said mutant strain has an increased amino acid production of a desired amino acid as compared to the production of the same amino acid in the strain before being mutagenized" does not have descriptive support in the specification as originally filed. The applicants respectfully traverse the rejection. The specification as filed, especially page 8 disclosed *Corynebacterium* species that produce L-lysine (lines 14 and 15) that are made by the means of mutagenesis of a parental strain (lines 9-11). Table 4 provides working examples of L-lysine production that is higher in progeny over that of the parental strains. The M.P.E.P. (§2163(I)(B) ¶2) states that "[w]hile there is no *in haec verba* requirement, newly added claim limitations must be supported in the specification through express, implicit, or inherent disclosure." Therefore, the applicants assert that while there is no word-for-word support for the amendment of claim 11, (which according to the M.P.E.P., is not required) the claim is supported in the specification as originally filed through disclosure as discussed herein.

189914-1

- 17 -

Liaw *et al.*
Appl. No. 09/630,454

The examiner also rejected claims 11-16 under 35 U.S.C. §112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventors had possession of the claimed invention at the time the application was filed. In particular, the examiner objected to part (f) of claim 11 and stated that the specification "failed to teach a single 'mutant' of the 'L-lysine-producing' *Corynebacterium* strain NRRL B-300059, NRRL B-30061, NRRL B-30062 or NRRL B-30063, which mutant is capable of increased production of any 'desired amino acid', L-lysine or non-L-lysine, compared to the same amino acid in the strain before being mutagenized, as recited."

The applicants respectfully traverse. The applicants have provided ample working examples and methods to produce the claimed mutants, as well as adequate description of the L-lysine-producing characteristics of the claimed microorganisms to have demonstrated possession at the invention at the time of filing the application. The examiner also stated that "[r]egardless of the complexity or simplicity of the method of isolation, conception cannot be achieved until reduction to practice has occurred." The applicants respectfully disagree and assert that there is no legal basis for this premise of rejection under any statute. The M.P.E.P. §2163(I) ¶2 states that to satisfy written description requirements, "[p]ossession may be shown in a variety of ways, including description of an actual reduction to practice, or by showing that the invention was 'ready for patenting' ... or by describing distinguishing identifying characteristics sufficient to show that the applicant was in possession of the claimed invention."

The U.S. Supreme Court held in *Pfaff v. Wells Elec., Inc.*, 124 F.3d 1429, 525

U.S. 55 (S.C. affirmed (1998)) that:

189914-1

- 18 -

Liaw *et al.*
Appl. No. 09/630,454

The primary meaning of the word "invention" in the Patent Act unquestionably refers to the inventor's conception rather than to a physical embodiment of that idea. The statute does not contain any express requirement that an invention must be reduced to practice before it can be patented. Neither the statutory definition of the term in §100 nor the basic conditions for obtaining a patent set forth in §101 make any mention of "reduction to practice." ... It is well settled that an invention may be patented before it is reduced to practice.

Therefore, a reduction to practice is not required. Additionally, the reliance of the examiner on *Fiers v. Revel* 884 F.2d 1164 (Fed. Cir. 1993), 25 U.S.P.Q.2d 1601, 1606 is not appropriate given that *Fiers v. Revel* was regarding an Interference proceeding and the analysis concerning reduction to practice was concerning 35 U.S.C. §102(g) and the establishment of priority for the Interference count. Therefore, the *Fiers v. Revel* discussion is a different standard and analysis than would occur during prosecution in the U.S.P.T.O. (See M.P.E.P. §715.07) The applicants submit that the disclosure is sufficient to one of skill in the art to recognize that the inventors had possession of the invention at the time the invention was made, and request that the rejection be withdrawn.

Objections to Claims

The examiner objected to claims 9 and 11 and requested amendments to the claims to make minor technical corrections.

Allowable Subject Matter

The applicants acknowledge with thanks, the statement by the examiner that claims 9 and 12-16 are free of the prior art.

189914-1

- 19 -

Liaw *et al.*
Appl. No. 09/630,454**Conclusion**

All of the stated grounds of objection and rejection have been properly accommodated or traversed. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.

Mary B. Tung
Mary B. Tung
Agent for Applicants
Registration No. 50,007

Date: Dec. 8, 2003

1100 New York Avenue, N.W.
Suite 600
Washington, D.C. 20005-3934
(202) 371-2600

189914_2.DOC

189914-1

EXHIBT A

raffinate

The phase remaining after extraction of some specified solute(s). When necessary it should be further specified, e.g. scrub raffinate. The original meaning of raffinate as a 'refined product' has become extended and changed by common usage. The term should normally be applied only to waste streams but the latter may form the feed to a further extraction process for another solute.

1993, 65, 2388